

**COVID-19 Pandemic's Impacts on Nigerian Educational System and Social-Economic Activities**

ABDULRAHEEM, Mukhtar Iderawumi\* and ADEBOWALE, Anthony Adebayo  
Oyo State College of Education, Lanlate, Oyo State, Nigeria

**Abstract.** As we are planning to enter the COVID-19 recovery phase, it will be critical to reflect on the role of educational systems and particularly education in fostering resilient societies. It is apparent and well-understood that the COVID-19 pandemic is of a world-wide concern. The pandemic has occupied attention of individuals, communities and governments; it has been guiding policy-makers decisions on all levels. International agencies, national governments, local government and public services have all been faced with the need to adapt to the crisis situation. Indeed, academic institutes needed to do their best in the new unpredictable reality. In this context, the importance of collaborations between educational institutions and private sector, which could contribute to the education considerably in these extreme conditions, increased during the COVID-19 pandemic. The stakeholders like school administrations (FME, NUC, NCCE, NBTE, TESCOM, UBEC, SUBEB, LIE, Vice Chancellors, Provosts, Rectors, Principals, Head Teachers etc.) need urgent response to take different supporting activities with respect to the education system to survive in the post-COVID-19.

**Keywords:** Education, COVID-19, Social-Economic, Pandemic, Lockdown

**Introduction**

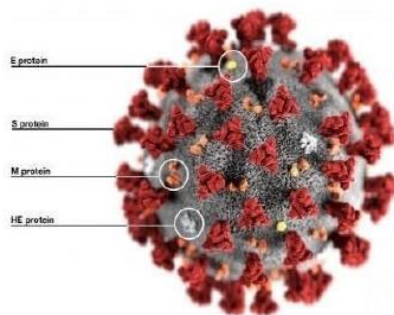
Education provides service for the majority of population including students, teachers, parents and other stakeholders. The issue of how the conventional educational processes, which are performed based on the teacher-student interaction in schools, will be maintained during the pandemic has become a challenge for countries (Daniel, 2020). In many countries, educational authorities have decided for school closures to keep the students and their families out of COVID-19 risk (ETF, 2018; OECD, 2020a; 2020b). By the last week of April 2020, the number of students who have been away from schools around the world exceeded to 1.6 billion, and these students constitute the 91% of student population of the world (Micks & McIlwaine, 2020).

With the COVID-19's impacts to humanity, some have quickly shouted, believed and thought abusively to the end of globalization. Previously, known as novel Coronavirus disease (2019) which relate mostly to Acute Respiratory disease or Syndrome caused by  $\beta$ -coronavirus or Coronavirus-2 (SARS-CoV-2). COVID-19 is an infectious disease caused by a Corona virus that was most recently discovered (Perween, 2020). The virus originated from Hubei Province of China in the city of Wuhan in December 2019 when WHO reported a mysterious Pneumonia in the city (Oyetoro et al., 2020). The virus quickly circulated all over the universe with the speed of light; consequently, becoming a global pandemic by March 11, 2020, recording over three (3) million cases and over 208,000 death among 213 countries and province (WHO, 2020a). According to Organization for Economic Co-operation and Development [OECD], (2020) uncertainty is extremely high concerning the full scale of the pandemic in African continents due to underreporting of cases and accuracy in term of data collections in the regions. However, various governmental organizations have adopted measures to control the pandemic, which include social distancing, schools' closure, discouraging large gathering of individuals, and restrictions of travelling. While we are also

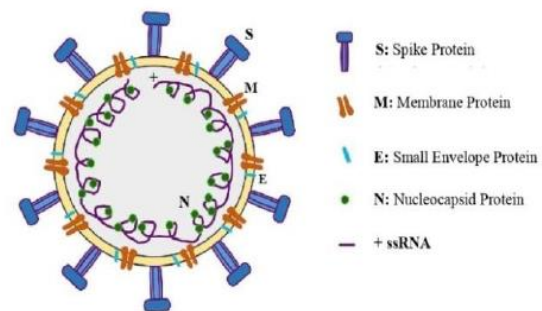
---

\*Corresponding Author: Abdulraheem, M.I. (m.iderawumi@gmail.com)

studying how COVID-2019 affects patients, elderly people and those with pre-existing medical problems (such as high blood pressure, coronary failure, lung disease, asthma, or diabetes) tend to experience more often severe illness than others (Rocklov et al., 2020; Jones et al., 2008). Since then, the number of confirmed cases of infection keeps rising both in Nigeria and across the globe. Nigeria placed a travel ban on 13 countries with high cases of the virus, the countries are; United States, United Kingdom, South Korea, Switzerland, Germany, France, Italy, China, Spain, Netherland, Norway, Japan and Iran. On 11th March 2020, World Health Organization (WHO) declares COVID-19 a pandemic. A pandemic is a disease that has spread across a large region; for instance, multiple continents or worldwide (Cucinotta & Vanelli, 2020). A schematic view of structure of corona virus and its structural specification is shown in Fig. 1 and 2 respectively.



**Fig. 1. Schematic view of structure of COVID-19**



**Fig. 2. Internal structure of COVID-19**

On 27th February 2020 the Federal Ministry of Health announced the confirmation of the first case of Corona virus disease in Lagos State, Nigeria from an Italian citizen who works in Nigeria and returned from Milan, Italy to Lagos, Nigeria on the 25th of February, 2020 (Maclean & Dahir, 2020). In the same communication the Honourable Minister of Health announced that the Multi-sectoral Coronavirus Preparedness Group led by the Nigeria Center for Disease control (NCDC) has immediately activated its National Emergency operations Center. On March 19th, 2020 a circular from Federal Ministry of Education has granted an approval for the closure of all school for a period of one (1) month commencing from Monday 23rd March 2020 to prevent the spread of the Coronavirus (COVID-19). However, the window of opportunity is narrowing due to the rapid escalation of confirmed cases. The Government urgently needs to intensify efforts to reach out to its people, to inspire and mobilise them as the nation faces a collective threat. Policy options are dictated by several parameters including: an existing weak health care system, a large section of the population with pre-existing conditions and governance deficits that have strained public trust.

As of today, 24th July 2021 at exactly 9:30pm, there are 194,212,455 Coronavirus cases, with 4,163,585 deaths while 176,284,317 have been recovered with 13,764,553 active cases (i.e. 13,681,695 (99.4%) in mild condition and 82,858 (0.6%) in serious/critical stage). In the total Coronavirus, patients died, interestingly, the highest number belongs to the United States of America, with total index cases of 35,283,075 and 626,658 deaths. The death toll is followed by the Brazil (548,420 from total index cases of 19,631,443), India (420,043 from total index cases of 31,332,159), Mexico (237,954 from total index cases of 2,726,160), Peru (195,696 from total index cases of 2,101,139), Russia (153,095 from total index cases of 6,102,469), UK (129,044 from total index cases of 5,637,975), Italy (127,937 from total index cases of 4,307,535), Colombia (118,188 from total index cases of 4,705,734), France (111,591 from total index cases of 5,953,071), Argentina (103,359 from total index cases of

4,827,973) and China the originating point of infection (4,636 from total index cases of 92,497). Nigeria, presently with 170,623 total index cases with 164,780 recovered, 2,131 deaths and 3,712 active cases<sup>1</sup>.

Nevertheless, the COVID-19 pandemic has actually opened up doors for new research prospects, especially those revolving around COVID-19. Research groups on this research theme were immediately formed across the globe, and this has actually shows the concept of universal brotherhood and togetherness. The sharing of knowledge and findings since the pandemic outbreak has then occurred really fast. Databases like 'Wiley Covid-19 Resources' (Wiley, 2020), 'NCBI SARS-CoV-2 Resources' (National Center for Biotechnology Information, 2020), and the 'NIH Open-Access Data and Computational Resources to Address COVID-19' (National Institute of Health, 2020) were created as open-sharing platforms specifically for resources pertaining COVID-19. In addition, reputable journal publishers such as Elsevier (2020), Springer (2020), SAGE (2020), and PLOS (2020) have allowed fast track review process for those articles on this theme and this has actually helped the research progress on COVID-19.

### **Global Impact of COVID-19 Pandemic**

COVID-19 came ostensibly to shake up and shake humanity. Caution! Help! Let's go back home! Stay in your country! Stay home! Stay safe! Be cautious and protected! I accuse you! Let's collaborate! Solidarity! Myself first, others after! Let's protect and bring our companies and investments back home! Such are the cries of humanity—which came from everywhere—that have been rising during this COVID-19 period. These cries are just an expression of the COVID-19's impacts to humanity.

The COVID-19 pandemic is currently the major public health issue and the largest threat which the world is undergoing after World War II (Malik et al., 2016; Zaki et al., 2012). The pandemic flies like a surge something that will devastate anyone not prepared strongly to deal with it. The pandemic is a significant public health threat, having reported 332,930 confirmed cases and 14,510 casualties all over the world till 23 March 2020. People all over the world are paying costs of the pandemic in the form of deaths of their loved ones and the emotional pain and anxiety felt by almost all. This is more than just a safety issue. It is a social, economic, and human crisis. The SARS-CoV-2 which is described as pandemic by WHO targets communities at its root (Bokhari & Shabbir, 2018). People in every part of the world directly or indirectly experiencing the serious effects of this outbreak. COVID-19 impact advisories have been released by WHO and all member nations. The only solution to prevent the disease from spreading is isolation from external world which results in depression, anxious conditions which is also related to instability, economic recessions and severe emotional trauma. Sociologist Eric Kleinberg said, "We are undergoing a phase of social Pain. It is going to result in social misery associated with loneliness and social distancing that is discussed by very few of us (Lillie et al., 2020).

It is quite important and necessary to conduct the remedial education after the pandemic especially for the disadvantaged students in terms of access to and benefit from distance education after the epidemic. With the reopening of schools after pandemic, it is critical to support the students from lower socioeconomic levels and those who cannot learn efficiently during distance education due to various restrictions. In this context, currently countries have been planning of implications to support the students' who have academic deficiencies during the distance education (UNESCO, 2020b). These plans, which require a large-scale organization such as rescheduling the teaching process based on health measures, transportation of teachers and students to schools, and supporting students academically and

<sup>1</sup>Covid-19 Coronavirus Pandemic. Weekly trends. Worldometers: <https://www.worldometers.info/coronavirus/>

socially, started in many countries in early May 2020 (UNESCO, 2020b). In this respect, COVID-19 showed the importance of countries' strategic planning for the transition from distance education to traditional education.

### **Impact of COVID-19 on Education System**

The COVID-19 pandemic has threatened the education systems in history. It affects nearly 1.6 billion learners in more than 190 countries across the globe. It is likely to impact on practically in schools-those are the most disadvantaged children, teachers, and education staff through their time in education. There were 94 percent of the world's student population have been affected due to closures of schools. The crisis is having a bad effect on pre-existing education by reducing the opportunities to continue learning for children, youth, and adults for those living in rural areas.

In order to control the spread of the novel coronavirus, state governments started the closure of schools and colleges across the country. It was somewhere announced in the second week of March as a temporary measure to avoid the crowd. Initially, for a month closure of schools was announced by the government but gradually the time of closure was extended and it is uncertain when they will reopen.

During this period, there are various activities take place which are very crucial such as competitive exams and entrance tests of various universities, board examination and semester examinations in universities, nursery school admissions as well as admission process in universities. In order to stop the outbreak of COVID-19, no immediate solution is found out. In Nigeria, the closure of school and university will not only have a short-term impact on the continuity of learning of young learners but it will have a large effect on the economic growth of the country as well as having large effect on the society.

### **Impact of COVID-19 on Schools**

In order to raise the skills, best public policy tool available is going to school. School is a place where children can have fun and raise social awareness and social skills. The main motive of going school or being in school is that it enhances the ability of the child. Spending a relatively short period of time in school increases skills and ability. On the other side missing the school or not attending the school will have negative effect on the skill growth

The closure of the schools has affected the structure of learning and schooling. Firstly, it affected the teaching and assessment methodologies. Online teaching methods are adopted by the few private schools that are handful in taking online classes. In those schools children are taking classes online. On the other side low-income private and government schools have complete closure and not having the access to elearning solution. It is disrupting the learning of students. Parents are facing various issues because of the change in teaching methodology.

### **Impact of COVID-19 on Higher Education**

As part of measures to contain the spread of COVID-19 in Nigeria, the Federal Ministry of Education, through the Permanent Secretary in the Ministry, on March 19th ordered the immediate closure of tertiary institutions secondary and primary schools across the nation over the outbreak of the disease in the country.

In addition to this, restriction was placed on inter states movement, market places were locked, religious gatherings of more than 10 persons were banned, social activities such as parties, ceremonies and club meetings etc. were placed on hold (Parke, 2020; Burke 2020). All public and private schools have to shut the doors of their schools following the government directive. The pandemic has unmasked substantial inequities in the education sector. While some private schools in urban areas are engaging their students through online teaching, a large number of students who are less privileged or are in rural areas were left out



(UNESCO, 2020a). Most schools lack facilities which hindered them to partake successfully in online teaching like they do in the developed countries (UNESCO, 2020c).

Thus, the scope of this opinion paper is to examine the effects of school closure due to COVID-19 on educational system in Nigeria. This paper also examines the strengths as well as challenges of online/virtual education which serves as a substitute to face-to-face method of teaching in Nigeria. The shutdown of universities has also affected the student's learning in universities. In order to ensure the continuity in institutes and universities, one immediate measure is essential. To conduct the class smoothly, online teaching methodology is adopted. Learning management software and open-source digital learning solutions are adopted by the universities to run online classes.

Higher education is a critical determinant of the economic future of the country and higher education sector has significantly affected by the pandemic as well. Due to the global closure of the institutes and universities, it is expected that it will reduce the demand for the international higher education.

The main concern which is coming in the mind of everyone is the effect of the pandemic on the rate of employment. Because of the current situation, graduates who have recently completed their graduation fear from the withdrawal of job offers from corporate.

Teaching methodology in institutes and universities has also transformed due to the lockdown in Nigeria. It has been replaced the old chalk-talk model with the new technology. E-learning solutions are making teaching and learning possible in this situation but engagement is a big problem attached with the elearning. The policy makers are trying to solve the problem of engagement of students and tackling the digital divide. In order to manage the crisis in Nigerian education section, a multi-pronged strategy is necessary in the long term.

An effective education and well-rounded practices are needed in Nigeria to build the capacity of young minds in this time of crisis. To ensure the overall progress in Nigeria, It will drive employability, wellbeing, health and productivity through the development of skills.

### **Impact on Social-Economic Activities**

COVID-19 has strongly moved humanity through its multiple impacts. Of course, not all of them are bad, some are just as good for humanity—to mention here only the reduction of the global temperature and the pollution levels in different world's corners (Makengo, 2020a)—via the reduction of mobility and productive activities. But at the level of socio-economic activities, the COVID-19's impacts are also seen in terms of crises.

The decline in oil prices by 55 percent between the end of 2019 to March 2020, is one of the most serious economic shocks that Nigeria has faced in its memory, especially as the oil sector contributes 65 percent and 90 percent to government and total export revenues, respectively.

The lack of demand could also reduce domestic oil production (supply) in the short to medium term. As such, fiscal space could be narrowed significantly further limiting the Government's ability to cope with an emergency response. These estimates, however, do not consider the adverse effects of the virus and related disturbances to other economic activities such as domestic trade and services which account for the bulk of GDP. The agricultural sector may not be seriously impacted immediately assuming that the virus does not spread to rural areas before the agricultural season starts next month.

Apart from the loss of human lives, coupled with anxiety, it is the recessions and the consequent loss of jobs, income, supply and demand that dominate its impacts on the socio-economic activities of various global actors (Makengo, 2020b). COVID-19 has ostensibly surprised mankind. Having no other choice, humanity is forced to enter into "mask mode".



The sector will be conducting monitoring meeting on COVID19 response twice a month. These meeting will be online (Skype, etc) with all implementing partners and other stakeholders.

As discussed above, information on partner activities and report (as well as different new remote programme and number of children accessing) will be shared directly with the Federal Ministry of Education and relevant education stakeholders. All Education data collection will strive to use the official Education Management Information System (EMIS) school codes to allow for seamless integration with FME data.

### **Planning for Post-COVID-19 Pandemic**

The question in the minds of national and global leaders in the midst of the evolving pandemic is how affected communities will bounce back and in a sustainable manner recover from the crisis. The economic distress associated with the pandemic, health implications to those affected especially the most vulnerable in the community, strain on service delivery infrastructure and the societal cost in terms of well-being could be enormous.

Any post-COVID-19 recovery strategy will need to re-establish the conditions for a quick return to a path of economic growth, improved social contract, and overall human development that can foster more inclusive societies in the future. The survivors and others directly affected by the disease must be assisted to regain their dignity and the affected communities supported to recover their livelihoods. This will require investment in innovative approaches for restoration of health systems; co-creation of culturally sensitive protection and community, peace and cohesion building measures that integrate recovery of lost livelihoods. A conflict-sensitive approach in such a case will be critical in the identification of risk and opportunities to ensure strategies do not worsen existing (latent) fragility, but rather help strengthen social cohesion if possible.

### **Transformations in Education after COVID-19 Pandemic**

Infectious diseases are a leading cause of death worldwide, accounting for a quarter to a third of all mortality. In most industrialized countries, contagious disease ranks after cancer and heart disease as a leading cause of mortality (Abdulraheem, 2019). Despite developments in pharmaceuticals, infectious disease rates rise due to changes in human behaviour, major and denser cities, increased trade and travel, inappropriate use of antibiotic drugs, and the emergence of new and resurgent pathogens. Infectious disease outbreaks can easily cross borders to threaten economic and regional stability, as demonstrated historically by the HIV, 2009 H1N1 influenza, H5N1, and SARS epidemics and pandemics (Oyetoro et al., 2020).

Education and its provision have continually changed partners from sole colonial administration to a tripartite agency (missionary organizations, government, and private individuals). It is the primary means of the deadline with the world's major problem and challenges of a complex and rapidly changing environment in contemporary Nigeria. It pervades every field of human endeavours and plays a fundamental role in the social, political and economic development of a country (Abdulraheem & Iderawumi, 2019).

COVID-19 has become effective on many sectors deeply in the world and it has become clear that its effects will be permanent. The current uncertainty in the economy causes firms to minimize their targets in the fields of production and recruitment, the number of people whose income decreased has increased, job losses have become more frequent, and these led to a decrease in purchasing power of people and worsen the economy (Ahmed et al., 2020). The predictions on the impact of pandemic show that COVID-19 will result in a greater loss of \$10 trillion in the global economy, and lower-income countries will be more affected by this loss, like other pandemics (Ahmed et al., 2020). However, after many crises,

such as post-war periods, the global economy has somehow been recovered, and national economies could adapt to changing conditions.

COVID-19 has constituted an important example for determining the recovery process of the global economy and the prioritization in case of such a situation. Education, which is one of the areas most affected by COVID-19, is also one of the areas where the major changes are expected after the pandemic (Strauss, 2020; Sweeney, 2020).

The catastrophe posed by coronavirus on education in Nigerian has revealed to us the benefits of online/virtual teaching. A large number of children whose education was completely disrupted for months due to COVID-19 pandemic is a great disaster to the national growth. The transition of conventional education processes to digital platforms after COVID-19 pandemic necessitates the supporting of students' and teachers digital literacy (Bergson-Shilcock, 2020; Moreno & Gortazar, 2020). Structuring the digital literacy as a part of education and ensuring that students and teachers use digital resources efficiently will be critical in the policies for supporting digital literacy. International Association for the Evaluation of Educational Achievement (IEA), which has been performing educational monitoring studies for a long time, has been conducting the International Computer and Information Literacy Study (ICILS) since 2013, and shows that these digital skills will be as important as major education disciplines (IEA, 2019).

Therefore, it is predicted that more studies will be conducted to close the gap regarding digital skills between students. The development of teachers' digital skills is also important in increasing the effectiveness of distance education.

The development of digital skills is expected to be emphasized more in the training of teachers for their professional and pedagogical development.

### **Conclusion**

It is vital to maintain the educational services and meet the educational needs of students in times of any crises particularly COVID-19. In this context, the importance of collaborations between educational institutions and private sector, which could contribute to the education considerably in these extreme conditions, increased during the COVID-19 pandemic. Therefore, it has been seen that cooperation between educational institutions with diverse numbers of students and profiles in a way that they will use all opportunities in common could made a great contribution. The COVID-19 pandemic has also had a severe impact on higher education as universities closed their premises and countries shut their borders in response to lockdown measures. Although higher education institutions were quick to replace face-to-face lectures with online learning in some institution, these closures affected learning and examinations as well as the safety and practical classes. Perhaps most importantly, the crisis raises questions about the value offered by a university education which includes networking and social opportunities as well as educational content. To remain relevant, universities will need to reinvent their learning environments so that digitalization expands and complements student-teacher and other relationships. The cooperation between institutions is also beneficial for non-governmental organizations and think tanks that focus on education. In case of inadequate cooperation between the private sector and governmental institutions, the efforts of institutions are limited to their own stakeholders, and the possible benefit of cooperation is restricted.

Humanitarian, development and government partners in Nigeria are already experiencing some challenges in the implementation of response to COVID-19. Such challenges range from funding requirements, protection of staff and capacity to deliver 100% while working from home. Despite these significant challenges, humanitarian and development organizations and Governments are implementing a range of interventions.



### Recommendations

In order to mitigate the impacts of the COVID-19 pandemic on socio-economic activities and education in Nigeria, the governments, parents, and the stakeholders are encouraged to pursue the following policy responses:

- i. The continuous learning program should be strengthened as a priority for online learning with social media and other channels which are included the Local Television and Radio stations and provide pre-recorded lessons for all grade levels on its Facebook page, WhatsApp, YouTube, and e-learning website. In addition, learning program via Telegram, Zoom, and Google meet to ensure effective learning;
- ii. The digital infrastructure should be promoted by creating standards for infrastructure and network connections at national and sub-national levels to strengthen learning, especially, in the countryside and remote areas so that the students can study online;
- iii. The ICT skills and digital education should be strengthened by providing training and development to teachers/lecturers to ensure effective online learning; and teachers and students engagement;
- iv. Provision of adequate resources needed for effective teaching and learning using online media.

### References

- Abdulraheem, M. I. & Iderawumi, M. A. (2019): Effect of Rural-Urban Migration on Education and Economics Development. *American Journal of Trade and Policy*, 6(1), 7-12. DOI: <https://doi.org/10.18034/ajtp.v6i1>
- Abdulraheem, M. I. (2019). Sources of Environmental Hazards effects and Control. *Asia Pacific Journal of Energy and Environment*. 6(2). 77-82. DOI: <https://doi.org/10.18034/apjee.v6i2>
- Ahmed, F., Ahmed, N., Pissarides, C., & Stiglitz, J. (2020). Why inequality could spread COVID-19. *The Lancet: Public Health*, 5(5), e240.
- Bergson-Shilcock, A. (2020, 21 April). *COVID-19 shines a spotlight on digital skills: Updates and key questions for advocates and policymakers*. National Skill Coalition. Retrieved from <https://nationalskillscoalition.org/news/blog/covid-19-shines-a-spotlight-on-digital-skillsupdates-and-key-questions-for-advocates-and-policymakers>
- Bokhari, M. U. & Shabbir, H. (2018). A comparative study on lightweight cryptography. In *Cyber Security* (pp. 69-79). Springer, Singapore.
- Burke, D. (2020). *What churches, mosques and temples are doing to fight the spread of coronavirus*. CNN.
- Cucinotta, D. & Vanelli, M. (2020). WHO declares COVID-19 a pandemic. *Acta biomedica: Atenei Parmensis*, 91(1), 157-160.
- Daniel, J. (2020). Education and the COVID-19 pandemic. *Prospects*, 49(1), 91-96. doi:10.1007/s11125-020-09464-3.
- Elsevier (2020). Call for Papers: Coronavirus Disease Outbreak-2019 (COVID-19). Retrieved 27 October 2020, from <https://www.journals.elsevier.com/journal-of-clinical-virology/call-for-papers/call-for-paperscoronavirus-disease-outbreak-2019-covid-19>
- ETF (2018). *Digital skills and competence, and digital and online learning*. Turin: European Training Foundation (ETF) Publishing.
- IEA (2019). *Preparing for life in a digital world: IEA International Computer and Information Literacy Study 2018 international report*. Amsterdam: IEA Publishing.
- Jones, K. E., Patel, N. G., Levy, M. A., Storeygard, A., Balk, D., Gittleman, J. L., & Daszak, P. (2008). Global trends in emerging infectious diseases. *Nature*, 451(7181), 990-993.

- Lillie, P. J., Samson, A., Li, A., Adams, K., Capstick, R., Barlow, G. D., & Ivan, M. (2020). Novel coronavirus disease (Covid-19): the first two patients in the UK with person to person transmission. *Journal of Infection*, 80(5), 578-606.
- Macleane, R. & Dahir, A. L. (2020). *Nigeria Responds to First Coronavirus Case in Sub-Saharan Africa*. The New York Times.
- Makengo, B. M. (2020a). Competitive Globalization and Quest for Strategic Minerals: DRC's Cobalt at the Heart of New Global Stakes, towards the Resource's Trap? *International Journal of Management Sciences and Business Research*, 9, 51-75.
- Makengo, B. M. (2020b). COVID-19 and Power Games in Africa: Can Sino-African Relations Withstand? *International Journal of Management Sciences and Business Research*, 9, 113-129.
- Makengo, B. M. (2021). COVID-19's Impacts and the End of Globalization? *Open Journal of Social Sciences*, 9, 212-233. <https://doi.org/10.4236/jss.2021.91015>
- Malik, M., Elkholy, A. A., Khan, W., Hassounah, S., Abubakar, A., Minh, N. T., & Mala, P. 2016. Middle East respiratory syndrome coronavirus: current knowledge and future considerations. *EMHJ-Eastern Mediterranean Health Journal*, 22(7), 533-542.
- Micks, J., & McIlwaine, J. (2020, 20 April). *Keeping the world's children learning through COVID-19*. UNICEF. Retrieved from <https://www.unicef.org/coronavirus/keeping-worldschildren-learning-through-covid-19>
- Moreno, J. M., & Gortazar, L. (2020, 8 April). *Schools' readiness for digital learning in the eyes of principals: An analysis from PISA 2018 and its implications for the COVID19 (Coronavirus) crisis response*. World Bank Blogs. Retrieved from <https://blogs.worldbank.org/education/schools-readiness-digital-learning-eyes-principals-analysis-pisa-2018-and-its>
- National Center for Biotechnology Information (2020). NCBI SARS-CoV-2 Resources. Retrieved 25 October 2020, from <https://www.ncbi.nlm.nih.gov/sars-cov-2/>
- National Institute of Health (2020). Open-Access Data and Computational Resources to Address COVID-19. Retrieved 27 October 2020, from <https://datascience.nih.gov/covid-19-openaccess-resources>
- OECD (2020a). *A framework to guide an education response to the COVID-19 pandemic of 2020*. Paris: OECD Publishing.
- OECD (2020b). *Education responses to COVID-19: Embracing digital learning and online collaboration*. OECD Policy Responses to Coronavirus (Covid-19). Retrieved from <https://www.oecd.org/coronavirus/policy-responses/education-responses-to-covid-19-embracing-digital-learning-and-online-collaboration/>
- Oyetoro, B. A., Abdulraheem, M. I. & Adefare, T. (2020). Comparative Effects of Covid-19 Pandemic on Agricultural Production and Marketing in Nigeria. *Global Journal of Science Frontier Research*, 20(9), 25-30. [https://globaljournals.org/GJSFR\\_Volume20/4-Comparative-Effects-of-Covid-19.pdf](https://globaljournals.org/GJSFR_Volume20/4-Comparative-Effects-of-Covid-19.pdf)
- Parke, C. (2020). *Churches cancel Sunday service, move online amid coronavirus outbreak*. Fox News.
- Perween, R. (2020). Global impact of covid-19 pandemic. *International Journal of Development Research*, 10(06), 36267-36282.
- PLOS (2020). *COVID-19 Updates*. Retrieved 27 October 2020, from <https://plos.org/covid-19/>
- Rocklöv, J., Sjödin, H., & Wilder-Smith, A. (2020). COVID-19 outbreak on the Diamond Princess Cruise ship: estimating the epidemic potential and effectiveness of public health countermeasures. *Journal of Travel Medicine*, 27(3), taaa030.

- 
- SAGE (2020). COVID-19 Articles Accepted for Fast-Track Publication in Psychological Science. Retrieved 27 October 2020, from <https://journals.sagepub.com/page/pss/covid-19>
- Springer (2020). Announcement: COVID-19 impact on peer review Retrieved 27 October 2020, from <https://www.springer.com/journal/38/updates/17991816>
- Strauss, V. (2020, 4 May). *Students wearing masks return to school as some countries start to reopen during Covid-19 crisis. Here's what that looks like.* The Washington Post. Retrieved from <https://www.washingtonpost.com/education/2020/05/04/students-wearing-masksreturn-school-some-countries-start-reopen-during-covid-19-crisis-heres-what-that-lookslike/>
- Sweeney, N. (2020, 7 April). *When the Covid-19 crisis finally ends, schools must never return to normal.* The Guardian. Retrieved from <https://www.theguardian.com/education/2020/apr/07/when-the-covid-19-crisis-finally-ends-uk-schools-must-never-return-to-normal>
- UNESCO (2020a). *COVID-19 educational disruption and response.* UNESCO.
- UNESCO (2020b). *Preparing the reopening of schools.* Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000373401>
- UNESCO, 290 (2020c). *Million students out of school due to COVID-19: UNESCO releases first global numbers and mobilizes response.* UNESCO.
- Wiley (2020). COVID-19 Resources. Retrieved 27 October 2020, from <https://www.wiley.com/network/covid-19-resources>
- World Bank (2020). *The impact of COVID-19 (Coronavirus) on global poverty: Why Sub-Saharan Africa might be the region hardest hit.* Retrieved from <https://blogs.worldbank.org/opendata/impact-covid-19-coronavirus-global-poverty-why-sub-saharanafrika-might-be-region-hardest/>
- Zaki, A. M., Van Boheemen, S., Bestebroer, T. M., Osterhaus, A. D., & Fouchier, R. A. (2012). Isolation of a novel coronavirus from a man with pneumonia in Saudi Arabia. *New England Journal of Medicine*, 367(19), 1814-1820.